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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/942,213

08/30/2001

Maki Tanaka

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20457

7590

08/23/2004

ANTONELLI, TERRY, STOUT & KRAUS, LLP  
1300 NORTH SEVENTEENTH STREET  
SUITE 1800  
ARLINGTON, VA 22209-9889

EXAMINER

STREGE, JOHN B

ART UNIT

PAPER NUMBER

2625

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/942,213

Applicant(s)

TANAKA ET AL.

Examiner

John B Strege

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 August 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                             | 6) <input type="checkbox"/> Other: _____                                    |

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## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-18 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 6-11 of Tanaka et al. U.S. Patent No. 6,613,593 (hereinafter "Tanaka") in view of Jun et al. USPN 6,366,688 (hereinafter "Jun").

Claim 1 will be mapped section by section with Claim 6 in the following argument.

-A method of inspecting a wafer, (lines 1-2 of claim 6 of Tanaka discloses a method of fabricating a semiconductor device)

-irradiating and scanning a focused charged particle beam onto a surface of a wafer on which patterns are formed through a semiconductor device fabrication process;  
obtaining a secondary charged particle image of a desired area of said wafer by

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detecting secondary charged particles emitted from said surface of said wafer through the irradiating and scanning step (lines 3-9 of claim 6 of Tanaka where a partial area corresponds to a desired area)

-obtaining information about image feature amount of each pattern within said desired area from said obtained secondary charged particle beam image; comparing information about image feature amount obtained in the step of obtaining information with a preset value (Tanaka does not claim these steps, but does disclose they would be obvious to one of ordinary skill in the art as will be discussed below)

-estimating, on the basis of a result from the step of comparing, a quality of patterns which have been formed around said desired area (claim 6 lines 10-12 of Tanaka discloses estimating failure conditions in areas other than the partial area of the wafer by using the detected secondary electron image, although it is not claimed to be on the basis of the comparison, however this will also be discussed as obvious below)

-and outputting an information of a result of said estimating (claim 6 lines 18-19 disclose displaying on a screen the stored data in order corresponding to each processing apparatus).

As discussed above Tanaka does not claim obtaining image feature amount of each pattern from the electron beam image and comparing the feature amount with a

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preset value. It is well known in the art of failure inspection to obtain feature information and to compare it with a threshold. Furthermore it would be obvious to use the same process for either fabricating or inspecting a semiconductor device.

Jun discloses an apparatus and method for contact failure inspection in semiconductor devices using a scanning electron microscope (col. 1 lines 10-15). Jun further discloses (the following limitations are all taken from col. 9 lines 21-41) a SEM signal reading module 60a which receives the SEM signal indicative of electrons received from a wafer while being irradiated by the electron beam. A contact profile calculation unit generates intensity profiles for the contact holes using the SEM signal data (corresponding to feature amount from the SEM image). Furthermore the average intensity value for the contact is compared to a predetermined threshold to identify a failure, and a result display module can display results of the failure analysis (corresponding to comparing the information about the feature amount with a preset value).

U.S. Patent No. 6,613,593 and Jun are analogous art because they are from the same field of endeavor of using a SEM to analyze the quality of a semiconductor.

At the time of the invention it would have been obvious to combine the steps of Jun involving obtaining a feature amount from the secondary electron image and compare it to a threshold in order to obtain the estimate the quality of a pattern in other desired areas. 6,613,593 discloses that it is using the image to make an estimate, but does not disclose how, while Jun discloses a well known method to obtain contact failure information of an image which could be used as a reasonable base for making

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estimates about the quality of the rest of the semiconductor. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to combine USPN 6,613,593 with Jun to obtain the invention as specified in claim 1.

Claim 10 of the instant application is similar to claim 1 of the instant application, with the additional limitation of determining a distribution of estimated failure occurrence (claim 10 of Tanaka lines 3-4 disclose this limitation).

Claim 14 of the instant application is similar to claim 1 of the instant application, with the additional limitation of storing a threshold value. The predetermined level discussed by Jun must be stored since it is predetermined, thus meeting this limitation.

Regarding claim 2 of the instant application, as discussed Jun discloses obtaining a feature amount for multiple contacts.

Claim 3 of the instant application maps to claim 8 of Tanaka.

Regarding claim 4 of the instant application, Jun discloses an average intensity as discussed above.

Regarding claim 5 of the instant application, the Examiner declares official notice that it is well known to determine a dimension of a pattern section with the motivation that a failure could be determined based on the dimensions of the contact.

Regarding claim 6-9 of the instant application, as discussed these are disclosed by Jun.

Dependent claims 11-13, and 15-18 of the instant application are similar to the dependent claims 2-9 of the instant application, thus the same arguments used for claims 2-9 apply equally to claims 11-13, and 15-18.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B Strege whose telephone number is (703) 305-8679. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JS



BHAVESH M. MEHTA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600